IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of: David K. McKnight et al.	:
Serial No: 10/734,761	: Before the Examiner: Jay A. Morrison
Filed: 12/10/2003	: Group Art Unit: 2168
Title: COMPUTER SYSTEM, COMPUTER PROGRAM PRODUCT AND METHOD OF PLOTTING NUMERICAL DATA	: Confirmation No.: 1980

APPELLANTS' BRIEF UNDER 37 C.F.R. §41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal to a final rejection dated November 15, 2006 of the claims in the Application. This brief is submitted pursuant to a Notice of Appeal filed on February 15, 2007 in accordance with 37 C.F.R. §41.31.

BRIEF FOR APPLICANTS - APPELLANTS

(i)

Real Party in Interest

The real party in interest is International Business Machines Corporation (IBM), the assignee.

(ii)

Related Appeals and Interferences

There are no other appeals or interferences known to appellants, appellants' representative or assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(iii)

Status of Claims

Claims 1 – 20 and 22 are finally rejected and Claim 21 was canceled from the Application. All the rejected claims are being appealed.

(iv)

Status of Amendment

An "Amendment After Final" was not filed.

(v)

Summary of Claimed Subject Matter

The invention, as claimed in Claim 1, provides a method of plotting numerical data. The method comprises selecting a root object; presenting to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of relationships between objects being defined by a schema; receiving one or more user-selected filters; based on said one or more user-selected filters, selecting a set of objects, each object of said set being

related to said root object either directly, or through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a parent object which is identical, each object of said set containing numerical data having a format suitable for a mathematical analysis; arranging said mathematical analysis of said numerical data; and plotting a result of said mathematical analysis of said numerical data on a graph (see generally paragraph [0022] on page 5, lines 14 – 27 and specifically paragraphs [0035] – [0042] on page 8, line 19 to page 10, line 11 and the steps of Fig. 4).

The invention, as claimed in Claim 11, provides a computer program product on a computer readable medium that comprises computer executable code for plotting numerical data which when executed by a processor in a computer system. The computer program product causes the computer system to select a root object; present to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of relationships between objects being defined by a schema; based on said one or more user-selected filters, select a set of objects, each object of said set being related to said root object either directly, or through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a parent object which is identical, each object of said set containing numerical data having a format suitable for a mathematical analysis; receive one or more user-selected filters; and arrange said mathematical analysis of said numerical data; and plot a result of said mathematical analysis of said numerical data on a graph (see generally paragraph [0022] on page 5, lines 14 – 27 and specifically paragraphs [0035] – [0042] on page 8, line 19 to page 10, line 11 and the steps of Fig. 4).

The invention, as claimed in Claim 22, provides a computer system for plotting numerical data. The computer system comprises a storage device for storing code data; and a processor for processing the code data to select a root

object; present to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of relationships between objects being defined by a schema; receive one or more user-selected filters; based on said one or more user-selected filters, select a set of objects, each object of said set being related to said root object either directly, or through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a next higher object in said each chain which is identical, each object of said set containing numerical data having a format suitable for a mathematical analysis; arrange said mathematical analysis of said numerical data; and plot a result of said mathematical analysis of said numerical data on a graph (see generally paragraph [0022] on page 5, lines 14 – 27 and specifically paragraphs [0035] – [0042] on page 8, line 19 to page 10, line 11 and the steps of Fig. 4).

(vi)

Grounds of Rejection to be Reviewed on Appeal

Whether it was proper to reject Claims 1 – 20 and 22 under 35 USC §103(a) as being unpatentable over Hellerstein et al. in view of Chandra et al.

(vii)

Arguments

Whether it was proper to reject Claims 1 – 20 and 22 under 35 USC §103(a) as being unpatentable over Hellerstein et al. in view of Chandra et al.

It is a well settled law that in considering a Section §103 rejection, the subject matter of the claim "as a whole" must be considered and analyzed. In the analysis, it is necessary that the scope and contents of the prior art and differences between the art and the claimed invention be determined. *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

Hellerstein et al. teach a method for exploratory analysis of data for event management. Specifically, Hellerstein et al. advocate the use of an event browser that provides an integrated environment for analysis of large volumes of semi-structured or non-structured data, such as event logs. The event browser deals with textual messages directly. To deal with the textual messages, the event browser integrates a parsing mechanism or engine and an analysis tool in one package. The role of the parsing engine is to translate an event message into a set of attribute values defined by the parsing rules, which are user-defined. For example, if parsing rules define information about host name, event type and time stamp, an event message is translated into a tuple of: host name, event type and time. The host name of each system is cross-referenced to an ID number for plotting purposes. Likewise, the event type of each event is cross-referenced to an ID number for plotting purposes. Thus, events can be plotted on a two-dimensional graph using host ID and time as two axes.

Thus, Hellerstein et al. teach that parsing rules, which are user-defined, take events which are in the form of textual messages and translate them into attribute values. Hellerstein et al., however, do not teach that a selected object of said set ***contains numerical data having a format suitable for a mathematical analysis***. Nor do they teach the step of ***selecting a set of objects, based on one or more user-selected filters*** and that a ***chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a parent object which is identical***. Indeed nowhere in their disclosure do Hellerstein et al. so much as mention the word ***schema*** let alone teach that type of objects and type of relationships between objects are defined by a schema as claimed in the present invention.

The Examiner stated in col. 11, lines 7 – 24, Hellerstein et al. teach the step of ***presenting to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of***

relationships between objects being defined by a schema. Appellants respectfully disagree.

In col. 11, lines 7 – 24, Hellerstein et al. disclose:

> We now further describe the processes of selection/filtering. FIG. 13 illustrates an exemplary process that occurs when the select button 880 or filter button 882 is pushed (activated). When the "Select" or "Filter" button is pushed by a user, the attribute viewer first gets highlighted items from the attribute tables (step 900). Then, the viewer defines SetOfAttributeConstraint based on the highlighted items (step 910). The viewer further gets the IsGIobal information, that is, determines if the global indicator 884 has been selected (step 915). Finally, the attribute viewer calls its SelectFilterData function with SetOfAttributeConstraint and IsGlobal as parameters (step 920). It is to be appreciated that selection (via a select button) generally refers to the operation where a user selects events of interest, while filtering (via a filter button) generally refers to the operation where a user excludes events that are not of interest.

From the paragraph reproduced above, it can be seen that Hellerstein et al. do not teach a ***filter that describes a type of objects and a type of relationships between objects wherein each type of objects and each type of relationships between objects are defined by a schema*** as claimed by the Examiner.

Further, the Examiner stated that in col. 11, lines 24 – 30, Hellerstein et al. teach the step of "***based on said one or more user-selected filters, selecting a set of objects... each object of said set containing numerical data having a format suitable for a mathematical analysis.***"

In col. 11, lines 24 – 30, Hellerstein et al. disclose:

> FIG. 14 illustrates an exemplary plot viewer according to the invention. The plot viewer is designed to support event graph

> analysis. A primary way for a user to manipulate data in the plot viewer is to rubber-band an area of interest. In this embodiment, the plot viewer is a two dimensional plot, which represents an event as a point using any two attributes of an event as two axes.

Since as described in col. 11, lines 7 - 24, the paragraph that immediately precedes the above-reproduced paragraph, Hellerstein et al. specifically teach that "filtering (via a filter button) generally refers to the operation where a user excludes events that are not of interest," Appellants submit that Hellerstein et al. do not teach the step of ***selecting a set of objects based on said one or more user-selected filters*** as claimed by the Examiner.

Firstly, excluding events which is done by the step of filtering taught by Hellerstein et al. does not equate "selecting events". Indeed, Hellerstein et al. specifically teach a method of ***selecting events***; thus further emphasizing that filtering is not equivalent to selecting.

As the Examiner correctly stated in the "Response to Arguments" section of the Final Office Action, Hellerstein et al. do disclose that a user may manipulate data via selection or filtration of data. However, the data to be manipulated must first be selected and that cannot be done via filtration.

Secondly, the objects that are selected in the claimed invention ***contain numerical data that has a format suitable for a mathematical analysis***. By contrast, Hellerstein et al. teach selecting ***data*** itself rather than objects containing data (see col. 11, lines 24 – 30).

Consequently, Appellants reiterate that Hellerstein et al. do not teach the step of ***based on said one or more user-selected filters, selecting a set of objects... each object of said set containing numerical data having a format suitable for a mathematical analysis***.

The Examiner admitted that Hellerstein et al. do not teach the step of selecting a root object; but asserted that Chandra et al. do teach this step. Therefore, the Examiner continues, it would have been obvious to combine the teachings of the two references to arrive at the claimed invention. Applicants

submit that the teachings of the two references cannot properly be combined together to arrive at the claimed invention.

Chandra et al. teach a method for matching consumers to events. According to Chandra et al., a matching capability is provided, which facilitates the matching of the consumers to the events. The matching facility includes a search data structure (e.g., a search tree or a search graph), which is used to determine the consumers interested in a particular event. Specifically, when a consumer is interested in an event, the consumer registers a filter and an action to take in response to the event with the system. The registered filter is then stored in a search data structure, such as a node of the search tree. The tree has a distinguished node that is designated as root. Accordingly, when an event is received, the search data structure is searched (i.e., the tree is traversed from the root node to the last node) to find all consumers interested in the event.

Since Hellerstein et al. advocate the use of an event browser that provides a user an integrated environment for analyzing large volumes of semi-structured or non-structured data while Chandra et al. teach a method for matching consumers to events in a publish/subscription system, there is no motivation to combine their teachings absent a specific suggestion to do so. In this particular case, there is not a teaching or suggestion, either explicitly or impliedly, in the references to combine the two references. Hence the teachings of the two references cannot properly be combined together.

The Examiner stated that the motivation to combine the teachings of the two references can be found in col. 2, lines 1 – 8. Applicants respectfully disagree.

In col. 2, lines 1 – 8, Chandra et al. disclose:

> Based on the foregoing, a need exists for a matching capability that does not require the partitioning of data into subjects. A further need exists for a matching capability that enables a consumer to use any filtering criterion expressible with the available predicates. Additionally, a need exists for a mechanism that allows a

> consumer to receive only the information that it desires, such that the filtering is done independent of the consumer.

Here, the predicates themselves are what constitute the filter (see col. 1, lines 22 – 25). Thus, Chandra et al. do not teach that any filter may be used but rather only a particular filter may be used although it (the filter) may be expressed in a number of different ways. As specifically taught by Chandra et al., the particular filter is the event to which a client has subscribed in the publish/subscription system.

Consequently, Appellants maintain that the teachings may not properly be combined together to show the present invention since one filter (i.e., the filter in Hellerstein et al.) may not be used instead of the other filter (i.e., the filter of Chandra et al.) and vice versa.

Nonetheless, even if the teachings of the two references could properly be combined together, the resulting combination would not teach the invention. As pointed out above, Hellerstein et al. do not teach the claimed elements.

Further, Chandra et al. do not teach the step of selecting a root object. Chandra et al. teach that to determine what event or events a client has subscribed to in a publish/subscription system, one needs to begin a search at the publish/subscription system level, which constitutes the root of the search, and moves to each node or level in a chain of nodes of levels. Each node or level contains a predicate or event subscribed to by the client. When a level or node is reached that does not contain an event subscribed to by the client, the recursive search ends.

But nowhere in the disclosure of Chandra et al. is there a teaching of ***selecting a root object*** as claimed in the claims in the Application.

Additionally, Chandra et al. do not teach the steps of ***each object of said set being related to said root object either directly, or through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a parent object which is identical***.

Since neither Hellerstein et al. nor Chandra et al. teach the claimed elements that the Examiner asserted, even if one could properly combine the teachings of the two references together, the resulting combination would not teach the claimed invention.

Based on the foregoing, Appellants request reversal of the rejection.

Respectfully Submitted

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(viii)

Claims Appendix

1. A method of plotting numerical data, comprising:

selecting a root object;

presenting to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of relationships between objects being defined by a schema;

receiving one or more user-selected filters;

based on said one or more user-selected filters, selecting a set of objects, each object of said set being related to said root object either directly, or through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a parent object which is identical, each object of said set containing numerical data having a format suitable for a mathematical analysis;

arranging said mathematical analysis of said numerical data; and

plotting a result of said mathematical analysis of said numerical data on a graph.

2. The method of claim 1, further comprising:

obtaining said schema; and

populating said schema with said root object and objects related to said root object.

3. The method of claim 1, wherein said schema has object descriptors for describing objects and relationship descriptors for describing possible relationships between objects, said schema associating specific relationship descriptors between specific object descriptors, and at least one of said object descriptors describing a type of numerical data.

4. The method of claim 3 wherein said one or more user-selected filters comprise at least one relationship filter describing a given relationship for selecting objects having said given relationship with a parent object, and at least one object filter describing a given object type for selecting objects having said given object type.

5. The method of claim 4 wherein said given relationship is one of an attribute relationship and a content relationship.

6. The method of claim 5 wherein at least one of said relationship descriptors describes a format relationship and said one or more user-selected filters comprise a format filter describing a given format for selecting objects containing numerical data having said given format.

7. The method of claim 1 wherein said root object is selected based on a user input.

8. The method of claim 1, further comprising selecting said mathematical analysis based on a user input.

9. The method of claim 1 wherein said presenting comprises displaying at least one menu having at least one selectable item.

10. The method of claim 9, wherein said at least one menu comprises at least one menu providing one or more relationships for selection, and at least one menu providing one or more types of objects for selection.

11. A computer program product on a computer readable medium comprising computer executable code for plotting numerical data which when executed by a processor in a computer system, causes said computer system to:

select a root object;

presenting to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of relationships between objects being defined by a schema;

based on said one or more user-selected filters, select a set of objects, each object of said set being related to said root object either directly, or through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a parent object which is identical, each object of said set containing numerical data having a format suitable for a mathematical analysis; receive one or more user-selected filters; and

arrange said mathematical analysis of said numerical data; and plot a result of said mathematical analysis of said numerical data on a graph.

12. The computer program product of claim 11, wherein said computer executable code when executed by said processor in said computer system, further causes said computer system to: obtain said schema; and populate said schema with said root object and objects related to said root object.

13. The computer program product of claim 11, wherein said schema has object descriptors for describing objects and relationship descriptors for describing possible relationships between objects, said schema associating specific relationship descriptors between specific object descriptors, and at least one of said object descriptors describing a type of numerical data.

14. The computer program product of claim 13 wherein said one or more user-selected filters comprise at least one relationship filter describing a given relationship for selecting objects having said given relationship with a parent object, and at least one object filter describing a given object type for selecting objects having said given object type.

15. The computer program product of claim 14 wherein said given relationship is one of an attribute relationship and a content relationship.

16. The computer program product of claim 15 wherein at least one of said relationship descriptors describes a format relationship and said one or more user-selected filters comprise a format filter describing a given format for selecting objects containing numerical data having said given format.

17. The computer program product of claim 11 wherein said root object is selected based on a user input.

18. The computer program product of claim 11, further comprising selecting said mathematical analysis based on a user input.

19. The computer program product of claim 11 wherein said presenting comprises displaying at least one menu having at least one selectable item.

20. The computer program product of claim 19 wherein said at least one menu comprises at least one menu providing one or more relationships for selection and at least one menu providing one or more types of objects for selection.

21. Canceled.

22. A computer system for plotting numerical data, comprising a storage device for storing code data; and a processor for processing the code data to:

select a root object;

present to a user for selection at least one filter, each of said at least one filter describing at least one of a type of objects and a type of relationships between objects, each type of objects and each type of relationships between objects being defined by a schema;

receive one or more user-selected filters;

based on said one or more user-selected filters, select a set of objects, each object of said set being related to said root object either directly, or

through a chain of intermediate objects, where each chain of intermediate objects has the same length and all objects at a given level of each chain have a relationship with a next higher object in said each chain which is identical, each object of said set containing numerical data having a format suitable for a mathematical analysis;

arrange said mathematical analysis of said numerical data; and

plot a result of said mathematical analysis of said numerical data on a graph.

(ix)

Evidence Appendix

None.

(x)

Related Proceedings Appendix

None.